



Growing Your Own Beans

Mark Chuljian II, January 18, 2023

Three Main Types

1. Dry Beans: *Phaseolus vulgaris* L.
 - a) Native to South America
2. Cow peas/Southern Peas: *Vigna unguiculata* L.
 - a) Native to Africa
3. Soybeans: *Glycine max*
 - a) Native to Eastern Asia



Dry Beans—

Phaseolus vulgaris L.

Market Classes

1. Pinto
2. Navy
3. Black
4. Kidney
5. Small Red
6. Pink
7. Great Northern
8. Cranberry etc...



Dry Beans—

Phaseolus vulgaris L.

Plant Habits

1. Bush
2. Vine
3. Upright short vine
4. Determinate
5. Indeterminate





Cow Peas—

Vigna unguiculata L.

- Many types and varieties
 - Black-eyed
 - Pink-eye purple-hull
 - Brown eyed
 - Crowder
 - Cream
 - Clay (brown)
 - White Acre
 - Zipper



Cow Peas—

***Vigna unguiculata* L.**

The easiest to grow.



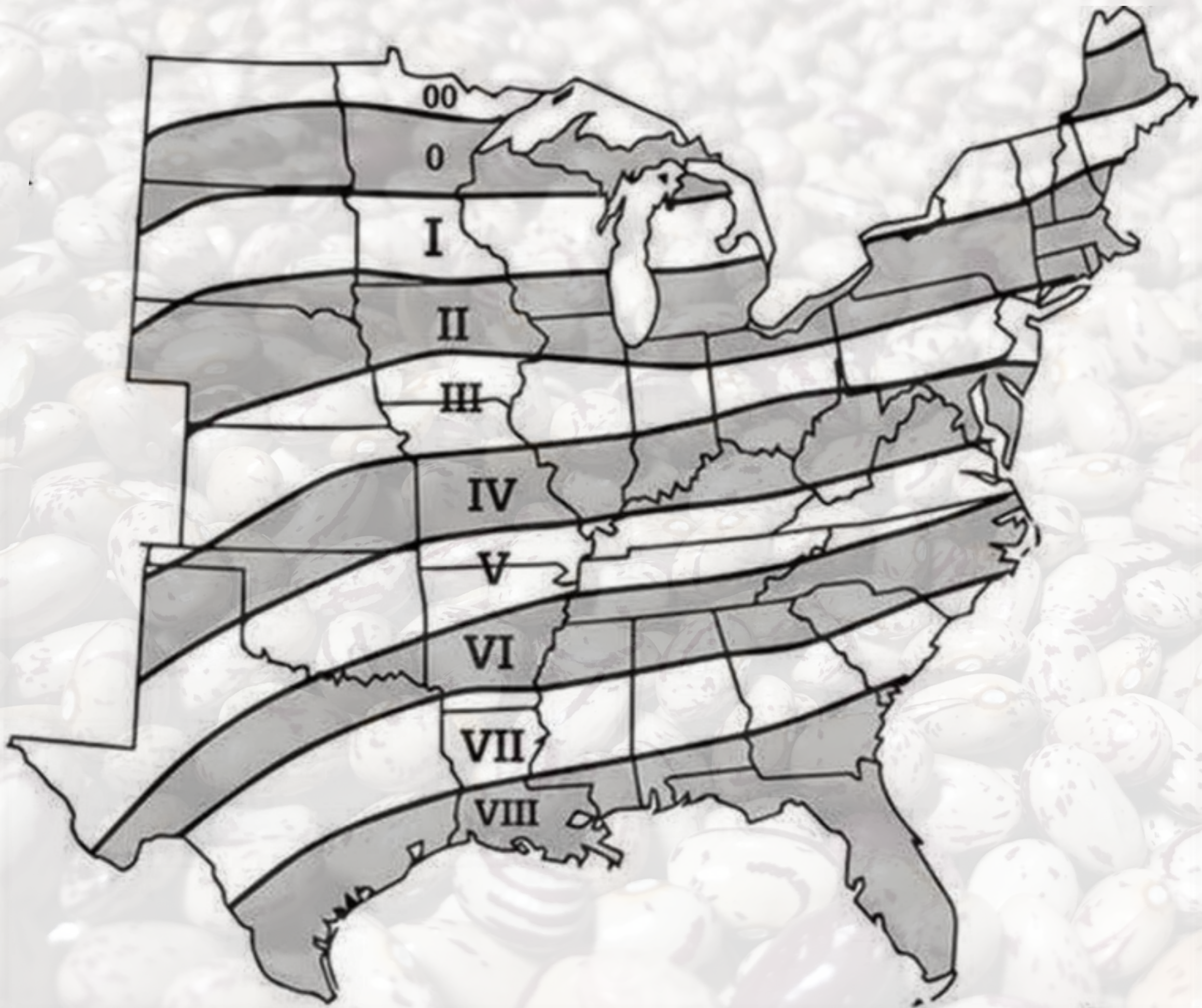
Soybeans—

Glycine max

Divided by maturity group

- The maturity group you grow is determined by your latitude
- Lower maturity groups are indeterminate
- Upper maturity groups are determinate





Soil

- Well drained
- Cow peas and soybeans are less sensitive to poorly drained



Fertility

- All should be inoculated with the proper rhizobia species
- For lime, phosphate, potassium etc. follow your soil test recommendations
- For nitrogen, inoculation is adequate for cow peas and soybeans. For dry beans, adding 40 pounds of actual N/acre (or 0.9 pounds/1000 sq. ft.) will improve yields.
- For cowpeas, avoid soils excessively high in nitrogen.

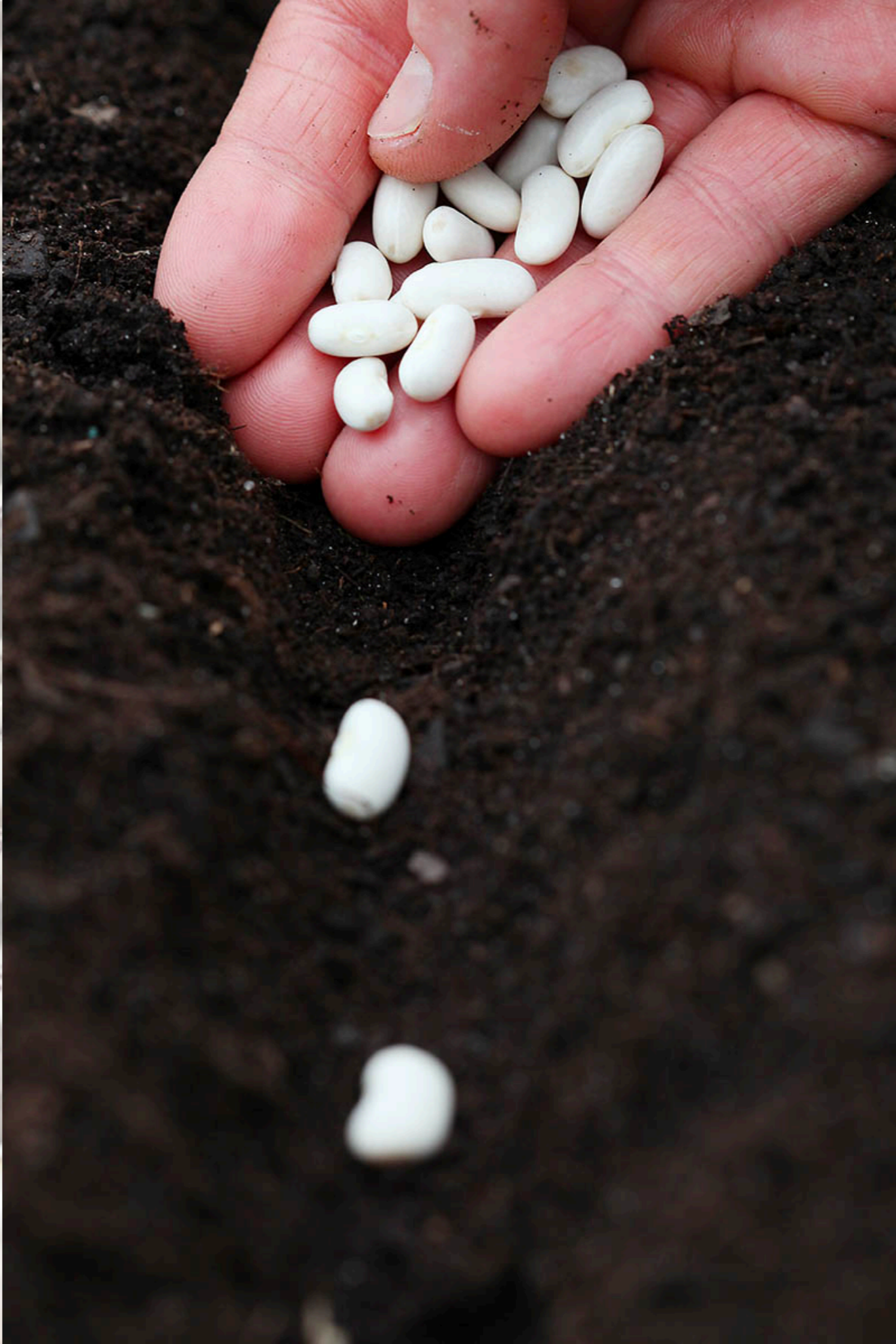
Planting--Timing

- After danger of frost
- Plant as soon as your soil temperature is 65 degrees F
- The earlier the better (unless Mexican bean beetles are a problem on dry beans)



Planting

- Depth: 1 - 1 1/2 inches
- Spacing:
 - 3-4 inches in-row, 30-36 inches between rows
 - Cow peas tend to get bigger than other types
 - Canopy should close in by bloom time when spaced for optimum yield



Weed Control

- Plant as soon as the soil is dry enough to work after a rain and don't water until emergence.
- Cultivate regularly until the canopy closes in



Disease Control

- Choose disease resistant varieties
- Dry beans are the only ones that will likely have disease issues in the home garden
 - White mold
 - Powdery mildew
 - Rust
- Minimize duration of wet periods (e.g. allow to dew to dry completely in the morning before irrigating.)
- Stay out of crop when wet.

Pests

- Mexican Bean Beetles
 - We plant dry beans in late June-early July
 - Cowpeas rarely have any pest problems
- Kudzu Bugs on soy beans
 - *Beauveria bassiana*—biological control
- Deer
- Other pests



Harvest—Dry Beans

Two ways to harvest

1. Fresh—generally referred to as Fresh Shell Beans when harvested fresh.
 - a) Either hand shell, or use a pea sheller
 - b) Can or freeze to preserve.







Harvest—Dry Beans

1. Dry harvest
 - a) Harvest when most of the pods have turned yellow
 - b) Pull plants up
 - c) Put in windrows
 - d) After plants and pods are completely dried pick up and hand thresh (or put through combine!)



Hand Threshing—Dry Beans

- When crispy dry, put in a bucket or other large container and crush pods
- Shake the beans to the bottom and throw the pods and plants away.
- If you're not concerned about damaging the seeds, you can use more violent methods, like spreading the plants on a tarp or shade cloth to dry, driving back and forth on them with a vehicle, and then picking up the plant debris with a pitchfork.

Machine Threshing



Harvest— Cow peas

1. Harvest fresh and shell
2. Dry harvest
 - a) Allow pods to completely dry on the plant
 - b) Pick when wet with dew
 - c) Spread out to dry
 - d) When pods are completely dry put in bucket or barrel and hand thresh



Harvest—Soy beans

- Hand harvest
 - Fresh for edamame: harvest when pods are filled out.
 - Dry: The same as for dry beans but when plants are completely dead. Pick up plants when wet with dew to avoid shatter.
 - [Interesting video showing hand harvest in Africa](#)
- Can be harvested with a combine.



Cleaning

- Threshed beans can be poured in front of a fan
- Better yet get a Clipper 2B Seed Cleaner
 - FB Marketplace (around \$150 in usable condition).
 - Cleaning is much easier and more thorough!





Storage of Dry Beans and Soybeans

- Dry beans should be brittle, not flexible; will break in half when cut with a knife. 12% moisture.
- Soy beans should be stored at around 10% moisture (don't become brittle)
- Store in paper bags





**Growing
Your Own
Small Grains**

Common Small Grains

- Wheat (spring & winter)
- Oats
- Rye (winter)
- Barley (usually spring)
- Triticale (cross between wheat and rye)

These are all cool-weather grains.



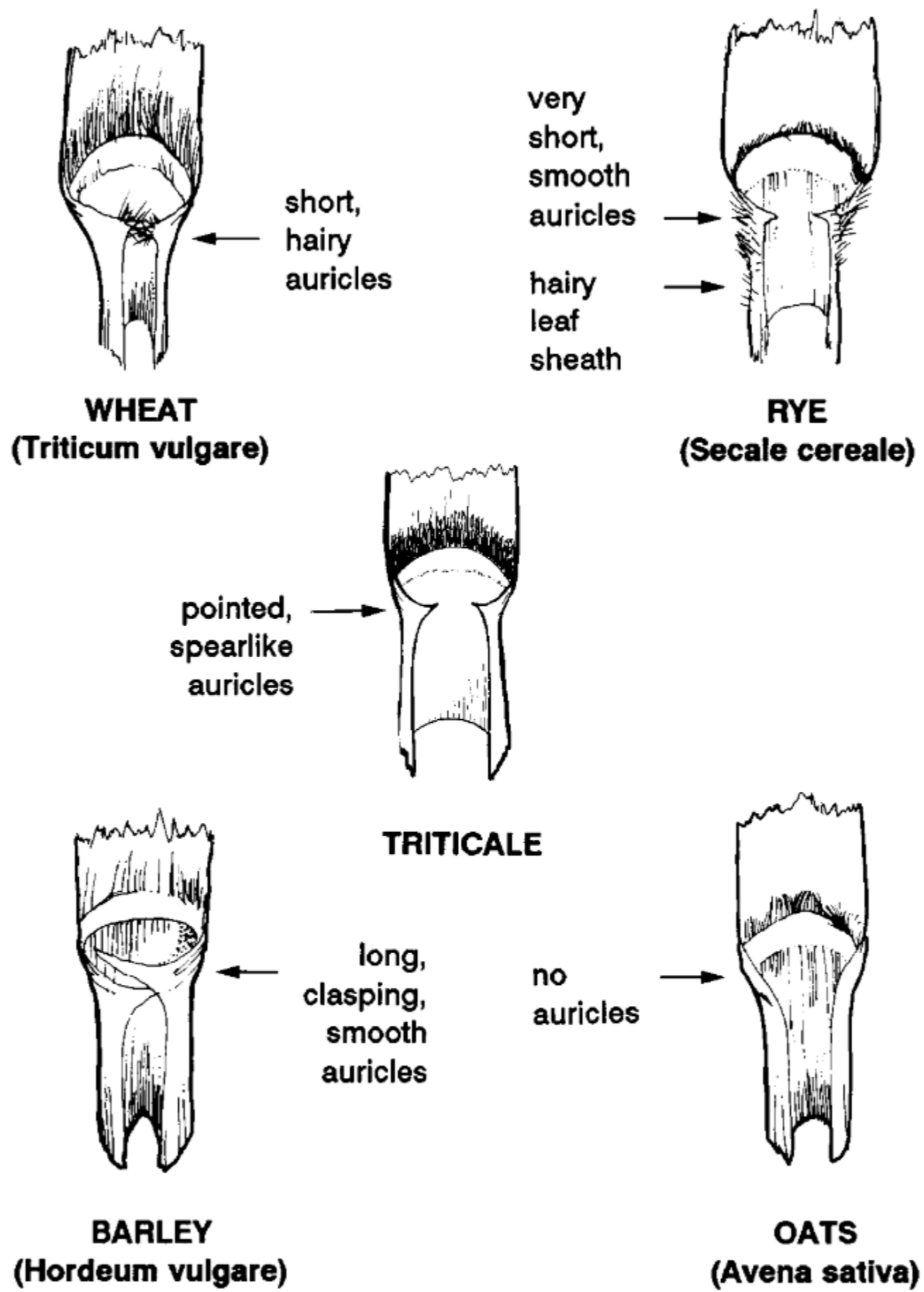
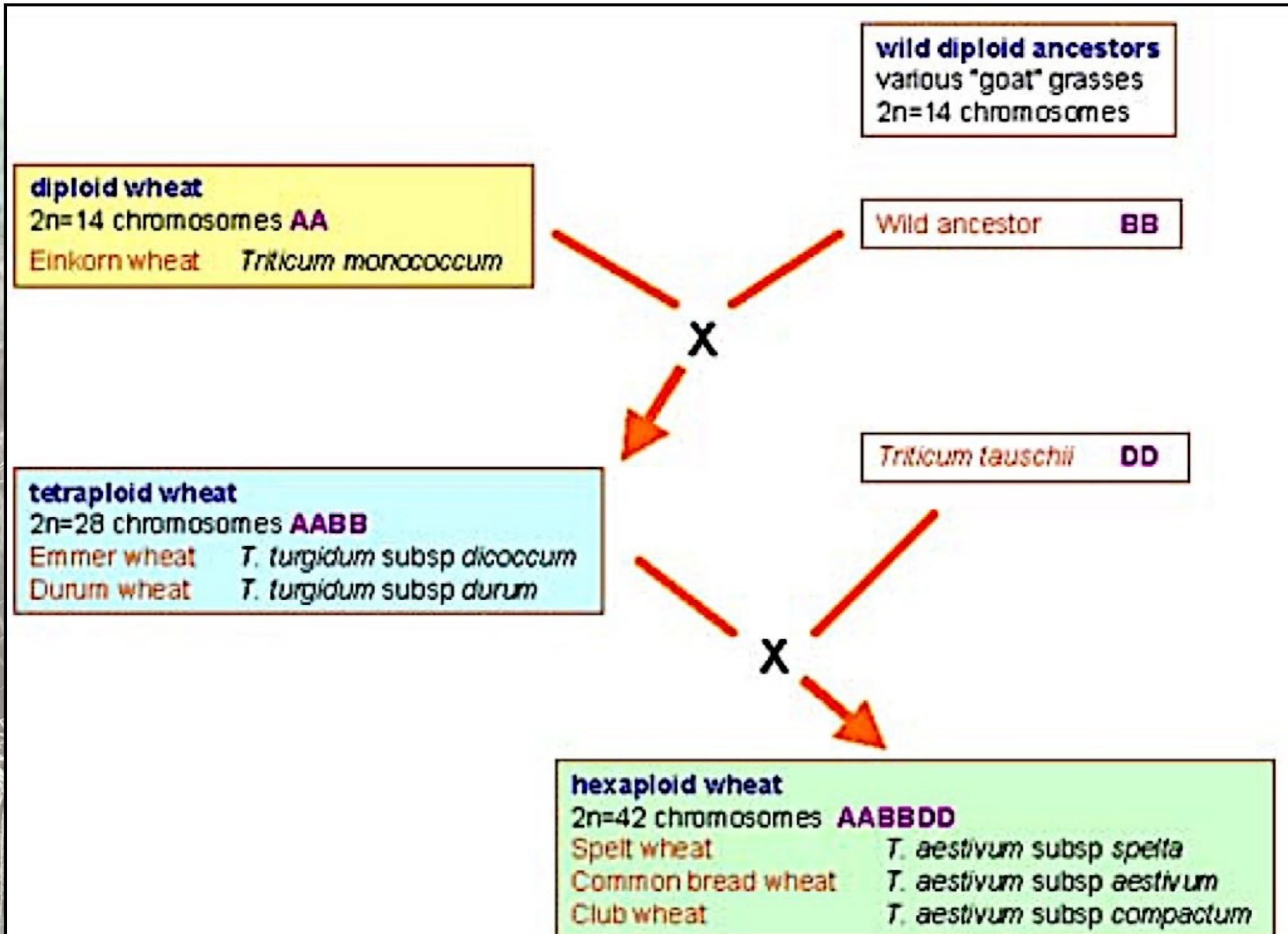


Figure 2. Comparison of leaf characteristics between wheat and other small grains

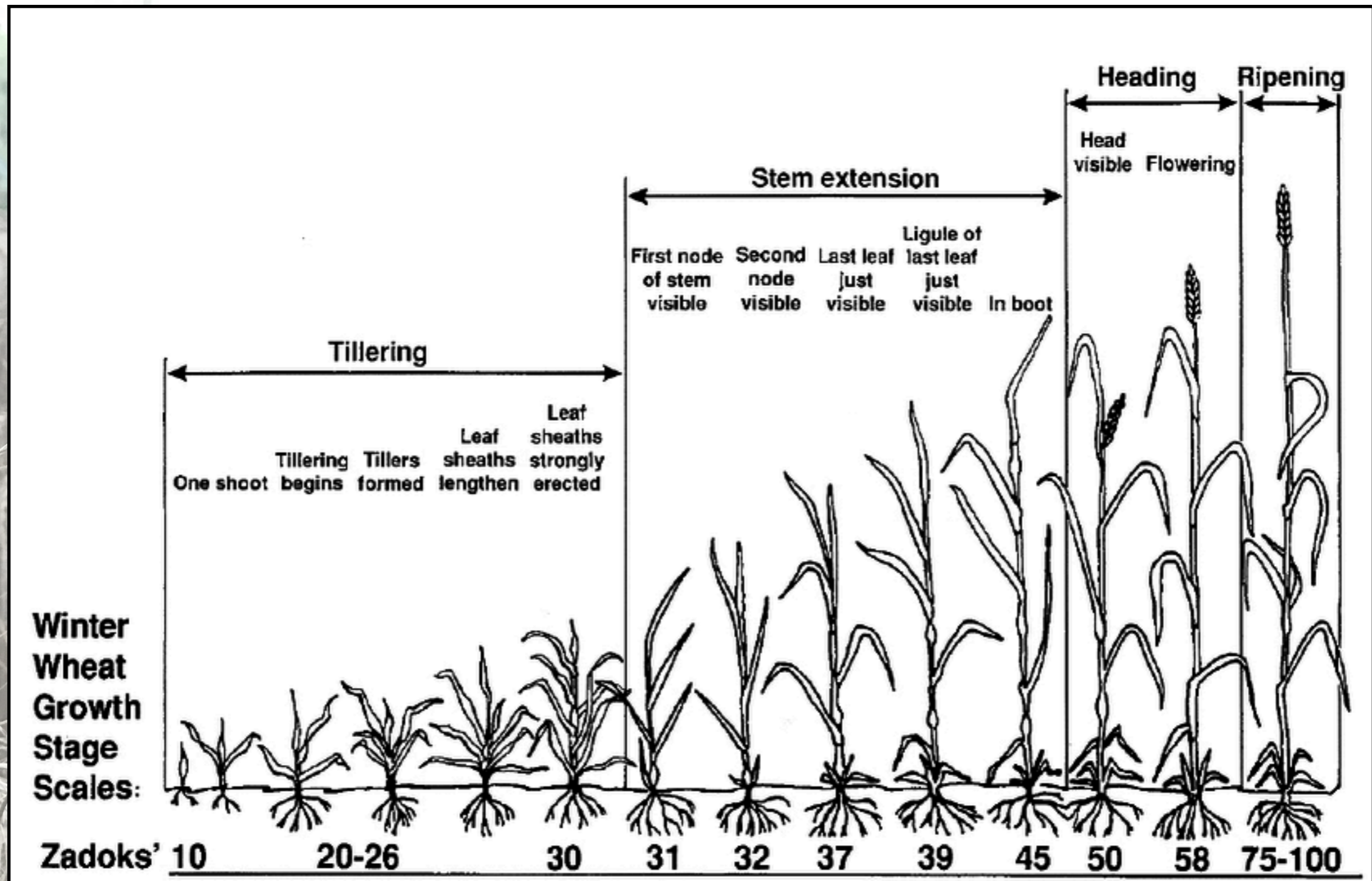
Wheat Species

- Common Bread wheat—*T. aestivum* subs *aestivum*
- Spelt wheat—*T. aestivum* subs *spelta*
- Club wheat—*T. aestivum* subs *compactum*
- Emmer wheat—*T. turgidum* subs *dicoccum*
- Durum wheat—*T. turgidum* subs *durum*
- Einkorn wheat—*Triticum monococcum*

Wheat Domestication



Growth and Development



Variety Selection

- What type?
 - Spring or winter?
 - Hard or soft?
 - This is basically determined by where you live.

Variety Selection cont.

1. Disease resistance
2. Maturity time
3. Insect resistance (hessian fly)
4. Straw strength
5. Grain quality

Soil Fertility

- Rich
- Well-drained
- Follow soil test recommendations for P,K, lime etc.
- For nitrogen, 100# actual N per acre.
 - 30-40#/acre (0.7 #/1,000sq. ft.) at planting
 - Add the remaining 60-70#/acre (1.5#/1,000 sq. ft.) at growth stage 30
 - If being grazed (e.g. by deer), add an additional 40-60#/acre (1.2#/1,000 sq. ft.) in December.
- Sulphur: wheat is sensitive to low sulphur levels; generally add 30#/acre (0.7#/1,000 sq. ft) by growth stage 30.

Soil Preparation

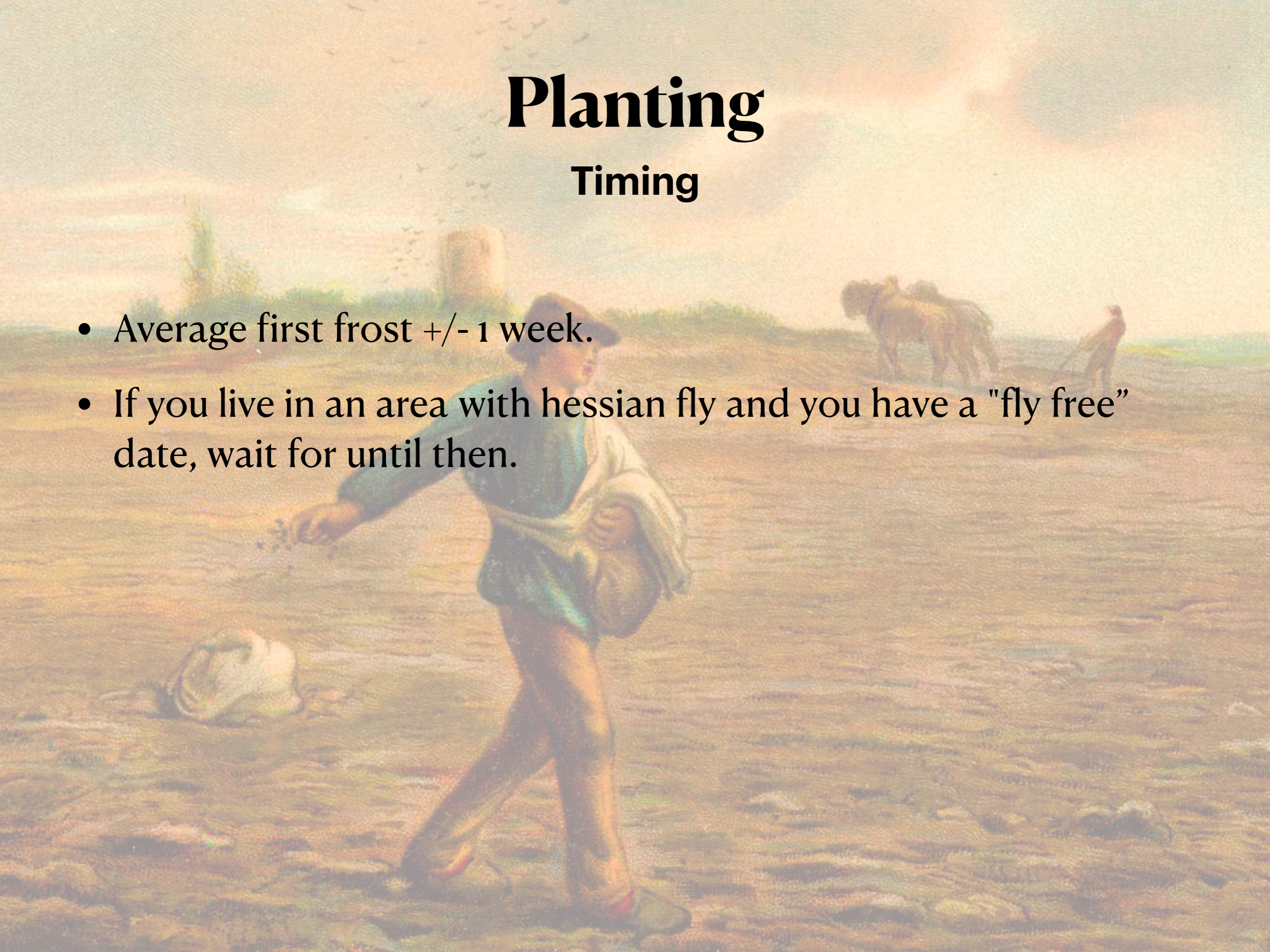
- Chisel and disk
- Home scale—well prepared seed bed
- Get rid of weeds



Planting

Timing

- Average first frost +/- 1 week.
- If you live in an area with hessian fly and you have a "fly free" date, wait for until then.



Planting

Spacing

- 35 seeds/square ft.
- Variation in size of seeds results in significant differences in seed count per pound; find the seed count/pound of the variety you're planting.
- Average is about 13,000 seeds/pound or 2.7#/1,000 sq. ft.

Planting

Depth

- 1-2 inches deep
- 1" in wetter soil
- 2" in dryer soil

1

2

3

4

5

Weed Management

- Weeds
 - Plant on time
 - Proper spacing
 - Adequate N
 - Will outcompete most weeds



Pest Management

- Different regions have different pests
- Hessian fly
 - Choose a fly resistant variety
 - Plant after “fly free” date
- Aphids
 - Are a vector for barley yellow dwarf



Disease Management

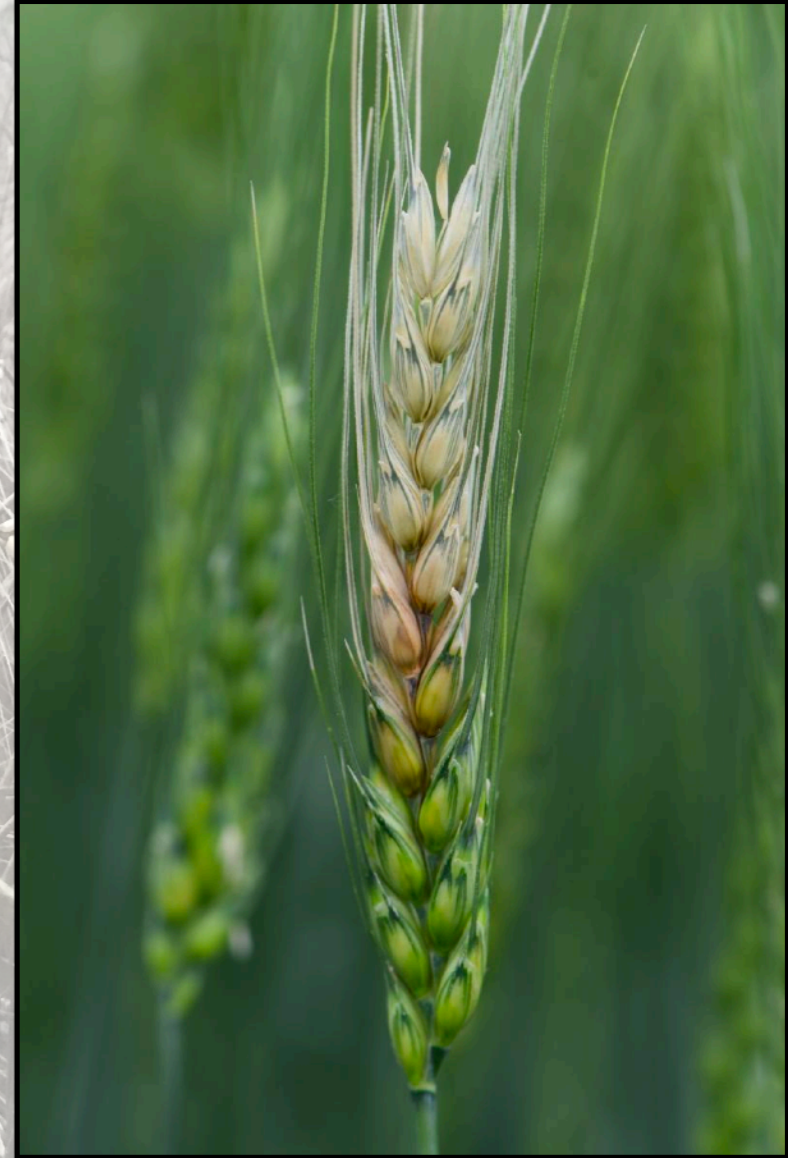
- Leaf rust
- Powdery mildew
- Barley yellow dwarf
 - Don't plant too early in fall



Plant resistant varieties!

Disease Management cont.

- Scab (Fusarium head blight)
 - Avoid rotation with corn or other cereal grain (alternate host)
 - Heads are infected at flowering
 - Results in poor quality grain
 - Produces a compound that is toxic
 - If you think you have an infection, clean and test grain. Cleaning can potentially remove enough of the toxin to be safe.
 - Toxin is called vomitoxin



Hand Harvest

When to harvest depends on harvest method.

- Hand harvest stage:
 - Chlorophyll is gone
 - Kernel is difficult to divide with thumbnail
 - Not completely dry or it will shatter



Hand Harvest cont.

- Cut
- Put in shocks
- Allow to dry until 12% moisture—kernels brittle
- Thresh



Threshing Ideas

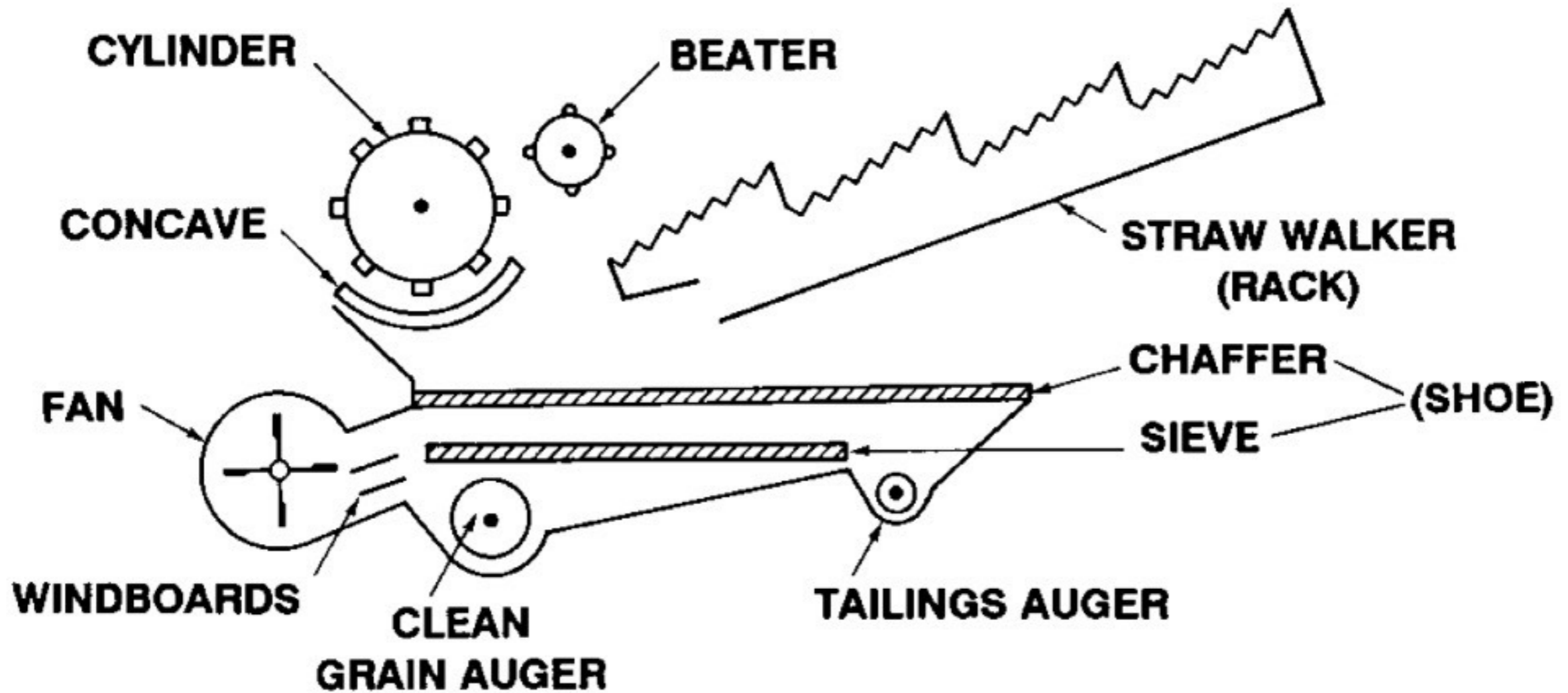


Figure 22. Threshing, separating and cleaning components of a typical combine

Mechanical Harvest

- We use a small pull-behind combine
 - learning to use requires practice to get a good threshing job and clean grain.
 - Follow recommendations in your combine owner's manual.
 - Wait until grain is around 12% moisture unless you have a way to dry it
 - Kernels should be brittle





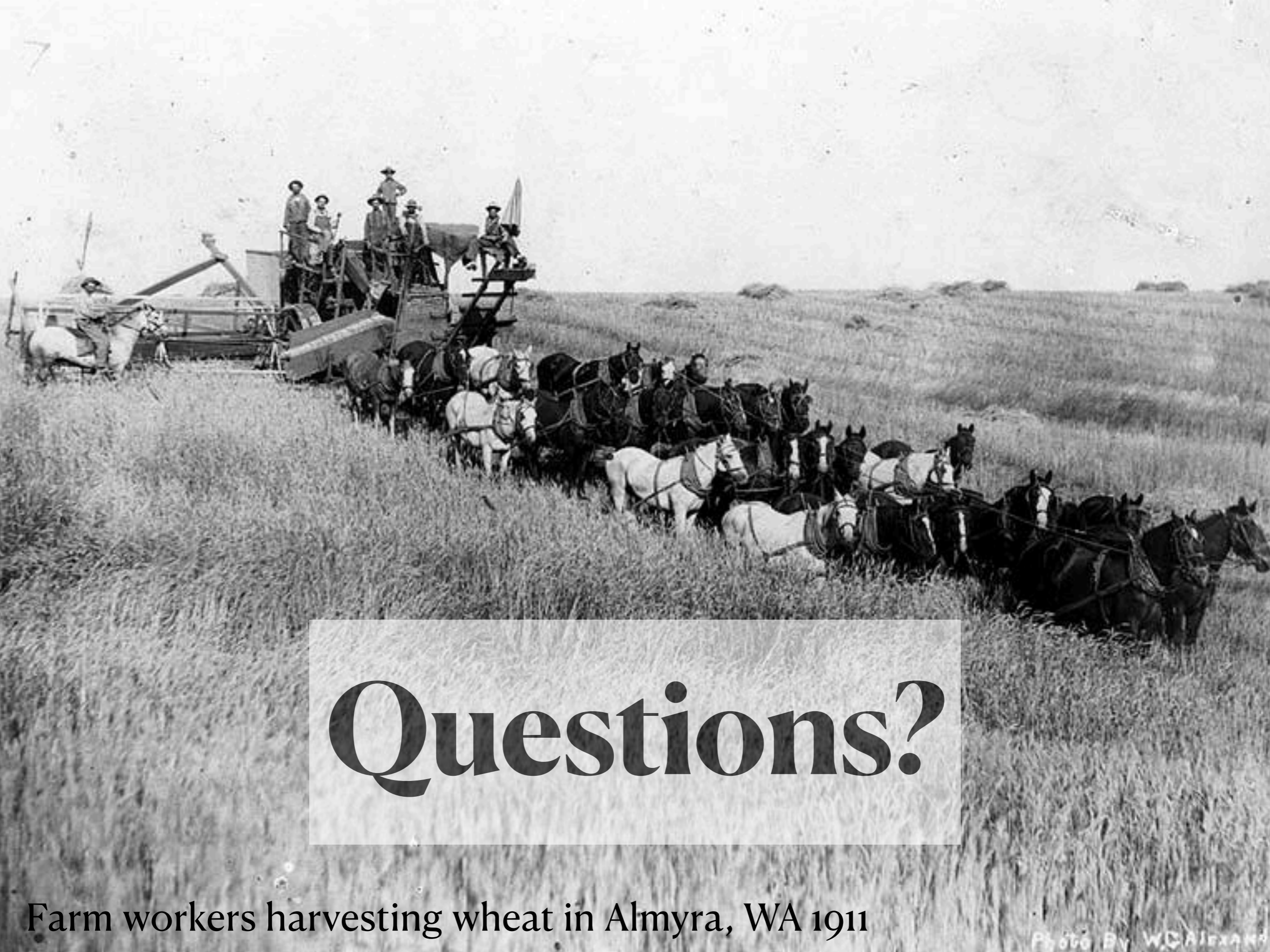
Cleaning & Storage

- Cleaning
 - Grain should be cleaned before being put into storage
 - Use the same seed cleaner as mentioned earlier
- Storage
 - 10-12% moisture depending on anticipated storage temperature
 - Ideally should be stored below 55 degrees F; this will also help with storage pest problems.
 - Multi-wall paper bags



**Now for a REALLY complicated
machine!**

<https://www.youtube.com/watch?app=desktop&v=efU5llyFlcw>



Questions?

Farm workers harvesting wheat in Almyra, WA 1911

